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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/624,891 | 07/23/2003 | Masaomi Ebe | Q76448 | 6755 |
| 23373 | 7590 | 02/27/2006 | EXAMINER | |
| SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037 | | | ROY, SIKHA | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2879 | |

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/624,891 | EBE, MASAOMI | |
| | Examiner | Art Unit | |
| | Sikha Roy | 2879 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-7 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 23, 2005 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 4-7 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for 'heat securing the seal plate', does not reasonably provide enablement for 'calcined seal plate'. 'Calcining' means heating to a high temperature but without fusing in order to drive off volatile matter or effect changes. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make use of the invention commensurate in scope with these claims. The specification discloses (page 7 lines 3-8) 'calcined seal layer 47' for sealing tightly the glass substrates but nowhere does it disclose the seal

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plate directly sealing the exhaust hole being calcined. The specification discloses (page 4, lines 16,17 page 5 lines 11,12 page 7 lines 17-19 page 10 lines 2-7) 'heat securing the seal plate' and Examiner notes that heat securing can be done in various ways, without calcining the paste.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,770,310 to Morimoto et al., U.S. Patent 6,313,579 to Nakano et al. and further in view of U.S. Patent 6,257,945 to Nakayama.

Regarding claim 1 Morimoto discloses (Fig. 4 column 3 line62- column 4 line 15) a flat display device comprising two sheets of glass substrate 20, 21, a seal layer 27, an exhaust hole 26 and a seal plate (lid member) 28 wherein the peripheries of the two sheets of the substrates 20,21 are sealed with the seal layer 27 via a predetermined gap held there between and that the exhaust hole 26 is provided in the substrate 21 and the exhaust hole 26 is sealed tightly by the seal plate 28.

Morimoto fails to disclose explicitly that the seal plate formed of pressed frit.

Nakano in analogous art of sealing plasma display panel discloses (Fig. 2 column 3 lines 11-19, column 4 lines 1- 14) a seal bonding member 20 made of frit (crystalline glass powder of low melting point) into a predetermined shape is used to bond the chip tube 11 to the gas charging hole 9. Nakano further discloses the seal bonding member formed of pressed frit having coefficient of thermal expansion close to that of the glass substrate provides reliability of bonding.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to substitute the sealer and the glass seal plate of Morimoto by the seal plate (seal bonding member) made of pressed frit and having coefficient of thermal expansion close to that of the glass substrate as taught by Nakano. This configuration provides increased reliability of bonding between the substrate and the plate and provides simplified manufacturing of the display panel.

Morimoto and Nakano do not exemplify the press-molded seal plate being calcined.

Nakayama in the same field of endeavor discloses (abstract) use of calcined frit for hermetically sealing to form a hermetically sealed assembly.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use calcined press-molded seal plate for the seal plate of Morimoto and Nakano for forming hermetically sealed assembly.

The recitations of 'seal plate prepared by press-molding and calcining the molded plate' and 'seal plate is sealed tightly by heat-securing' describe the method of forming

the flat display panel and is not germane to the issue of patentability of the panel itself. Therefore these limitations have not been given patentable weight.

Regarding claim 5 Morimoto discloses the substrate made of glass and Nakano discloses (column 3 lines 16-19) the thermal expansion coefficient of the seal plate (seal bonding member) is 0.8 to 0.65 times the thermal expansion coefficient of the glass substrate. The reason for combining the arts as in claim 1 applies.

Regarding claim 6 Nakano discloses (Fig. 5) the thermal coefficient of the seal plate is of $61 \text{ to } 83 \times 10^{-7} / ^\circ\text{C}$, which is within the claimed range.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,770,310 to Morimoto et al., U.S. Patent 6,313,579 to Nakano et al. U.S. Patent 6,257,945 to Nakayama and further in view of U.S. Patent 6,827,623 to Nakatake et al.

Claim 4 differs from Morimoto, Nakano and Nakayama in that Morimoto, Nakano and Nakayama do not exemplify the seal plate formed of glass plate providing high infrared absorbency.

Nakatake in same field of endeavor discloses (column 15 lines 46-57) glass frit formed of a material having high infrared absorption rate so that the seal plate can be melted by infrared, thereby sealing the through hole.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the sealing plate of Morimoto, Nakano and Nakayama made of

glass with high infrared absorbency as suggested by Nakatake for sealing the exhaust hole by melting the seal plate by infrared radiation.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,770,310 to Morimoto et al., U.S. Patent 6,313,579 to Nakano et al. U.S. Patent 6,257,945 to Nakayama and further in view of U.S. Patent 5,914,531 to Tsunoda et al.

Referring to claim 7 Morimoto, Nakano and Nakayama are silent about the outer surface of the seal plate covered with damp-proofing resin.

Tsunoda in the art of packaging semiconductor devices discloses (column 7 lines 29-49) the circuit board is sealed with resin and thus is greatly protected from moisture. This provides enhanced moisture-proof reliability of the device.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include resin covering the seal plate of Morimoto, Nakano and Nakayama as suggested by Tsunoda for enhancing moisture-proof reliability of the display device.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,797,780 to Peng U.S. Patent 6,313,579 to Nakano et al. and further in view of U.S. Patent 6,257,945 to Nakayama.

Regarding claim 1 Peng discloses (Figs. 3,6 column 3 lines 30-45,55-60 column 4 lines 12-36) a flat panel display comprising two sheets of substrates 1a,1b, a seal layer 5(glass frit), an exhaust hole 9, a seal plate 17, wherein the peripheries of the two sheets of the substrates 1a,1b are sealed with the seal layer 5 via a predetermined gap

held there between and that the exhaust hole 9 is provided in the back substrate 1b and the exhaust hole is sealed tightly by the seal plate 17.

Peng does not exemplify the seal plate formed of pressed frit.

Nakano in analogous art of sealing plasma display panel discloses (Fig. 2 column 3 lines 11-19, column 4 lines 1- 14) a seal bonding member 20 made of frit (crystalline glass powder of low melting point) into a predetermined shape is used to bond the chip tube 11 to the gas charging hole 9. Nakano further discloses the seal bonding member having coefficient of thermal expansion close to that of the glass substrate provides reliability of bonding.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to substitute the seal plate of Peng by the seal plate (seal bonding member) made of pressed frit and having coefficient of thermal expansion close to that of the glass substrate as taught by Nakano. This configuration provides increased reliability of bonding between the substrate and the plate and provides simplified manufacturing of the display panel.

Peng and Nakano do not exemplify the press-molded seal plate being calcined.

Nakayama in the same field of endeavor discloses (abstract) use of calcined frit for hermetically sealing to form a hermetically sealed assembly.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use calcined press-molded seal plate for the seal plate of Peng and Nakano for forming hermetically sealed assembly.

The recitations of 'seal plate prepared by press-molding and calcining the molded plate' and 'seal plate is sealed tightly by heat-securing' describe the method of forming the flat display panel and is not germane to the issue of patentability of the panel itself. Therefore these limitations have not been given patentable weight.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. KR 2001-100660 A to Kim et al. discloses method of manufacturing plasma display panel by sealing exhaust by melting glass frit.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sikha Roy

Sikha Roy
Patent Examiner
Art Unit 2879